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TITLE: Modified phytases

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CLAIMS:

What is claimed is:

1. A modified *Aspergillus fumigatus* phytase with a specific activity improved over the specific activity of the corresponding unmodified *Aspergillus fumigatus* phytase wherein the amino acid sequence of the unmodified phytase has been changed at a position corresponding to position 27 of the phytase of *Aspergillus niger* (SEQ ID NO:1), as identified by PILEUP version 8 amino acid sequence alignment program, to an amino acid selected from the group consisting of Ala, Val, Leu, Ile, Thr, Gly, and Asn.
2. A modified *Aspergillus fumigatus* phytase according to claim 1, further comprising an additional mutation selected from the group consisting of S66D, S140Y, D141G, A205E, Q274L, G277D, G277K, Y282H, and N340S.
3. A modified *Aspergillus fumigatis* phytase with a specific activity improved over the specific activity of the corresponding unmodified *Aspergillus fumigatus* phytase wherein the amino acid sequence of the modified *Aspergillus fumigatus* phytase has a mutation selected from the group consisting of S66D, S140Y, D141G, A205E, Q274L, G277D, G277K, Y282H, N340S, and combinations thereof, wherein the respective amino acid position of each mutation corresponds to the amino acid position of an *Aspergillus niger* phytase (SEQ ID NO:1) as identified by PILEUP version 8 amino acid alignment program.
4. A modified phytase according to claim 1 wherein the unmodified phytase has the sequence of SEQ ID NO:3.
5. A modified phytase according to claim 4 wherein the amino acid sequence of SEQ ID NO:3 has been changed at a position corresponding to position 27 of the phytase of *Aspergillus niger* to the amino acid Ala.

6. A modified phytase according to claim 4 wherein the amino acid sequence of SEQ ID NO:3 has been changed at a position corresponding to position 27 of the phytase of *Aspergillus niger* to the amino acid Val.
7. A modified phytase according to claim 4 wherein the amino acid sequence of SEQ ID NO:3 has been changed at a position corresponding to position 27 of the phytase of *Aspergillus niger* to the amino acid Leu.
8. A modified phytase according to claim 4 wherein the amino acid sequence of SEQ ID NO:3 has been changed at a position corresponding to position 27 of the phytase of *Aspergillus niger* to the amino acid Ile.
9. A modified phytase according to claim 4 wherein the amino acid sequence of SEQ ID NO:3 has been changed at a position corresponding to position 27 of the phytase of *Aspergillus niger* to the amino acid Thr.
10. A modified phytase according to claim 4 wherein the amino acid sequence of SEQ ID NO:3 has been changed at a position corresponding to position 27 of the phytase of *Aspergillus niger* to the amino acid Asn.
11. A modified phytase according to claim 4 wherein the amino acid sequence of SEQ ID NO:3 has been changed at a position corresponding to position 27 of the phytase of *Aspergillus niger* to the amino acid Gly.
12. A modified phytase according to claim 4 wherein the amino acid sequence of SEQ ID NO:3 has been modified as follows: Q23L and S62D.
13. A modified phytase according to claim 4 wherein the amino acid sequence of SEQ ID NO:3 has been modified as follows: Q23L, S136Y, and D137G.
14. A modified phytase according to claim 3 wherein the unmodified phytase has the sequence of SEQ ID NO:3.
15. A modified phytase according to claim 14 wherein the amino acid sequence of SEQ ID NO:3 has been modified as follows: S62D.
16. A modified phytase according to claim 14 wherein the amino acid sequence of SEQ ID NO:3 has been modified as follows: S136Y.
17. A modified phytase according to claim 14 wherein the amino acid sequence of SEQ ID NO:3 has been modified as follows: D137G.
18. A modified phytase according to claim 14 wherein the amino acid sequence of SEQ ID NO:3 has been modified as follows: A200E.
19. A modified phytase according to claim 3 wherein the amino acid sequence of SEQ ID NO:3 has been modified as follows: Q269L.
20. A modified phytase according to claim 14 wherein the amino acid sequence of SEQ ID NO:3 has been modified as follows: G272D.
21. A modified phytase according to claim 14 wherein the amino acid sequence of SEQ ID NO:3 has been modified as follows: G272K.
22. A modified phytase according to claim 14 wherein the amino acid sequence of SEQ ID NO:3 has been modified as follows: Y277H.
23. A modified phytase according to claim 14 wherein the amino acid sequence of SEQ ID NO:3 has been modified as follows: N335S.
24. A food or feed composition comprising a modified phytase of claim 1.